Preperation of metallic calcium samples for 41Ca dating

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Calcium is a major element in the biosphere and lithosphere. Its cosmogenic isotope 41Ca, with a half-life of 99 thousand years1, can trace environmental processes at an age scale beyond the reach of 14C.

Here,we achieved the analysis of 41Ca in environmental samples using ATTA, and a single analysis requires 80mg of metallic calcium. In addition, we have developed a process for preparing metallic calcium samples from different types of environmental samples for the application of 41Ca dating. The sample types and extraction efficiency are granite (40%), loess (60%), bone (90%), seawater(90%), foraminifera (90%), and coral (90%), respectively.